

General Information**1992**

**Video: 4 Heads Rotary
Audio: Fixed Head 1CH
Covers Models
Akai VS-F441/F450
Akai VS-F455/F490
Akai VS-F497**

Matrix

| Item | See Model |
|--|--------------------------------|
| Mechanical Parts View | Akai VS-422/425 89/90 Book. |
| Mechanical Adjustments | Akai VS-F10/F11 91/92 Book. |
| Replacement of Idler | Akai VS-F410 |
| Back Tension Adjustment | Akai VS-F260 |
| Power Supply - VS-F490 | Akai VS-F260 |
| Power Supply - VS-F440 | Akai VS-F260 |
| Power Supply - VS-F441/F450/ F455/F490/F497 | Akai VS-F260 |
| Main Diagram 1/3 | Akai VS-F260 |
| Main Diagram (B) | Akai VS-F260 |
| Operation (A) | Akai VS-F260 |
| VPST/PDC | Akai VS-F260 |
| VIF Unit | Akai VS-F260 |
| R/C Others | Akai VS-F260 |

**Head Motors and
Miscellaneous**

| Part No. | Description |
|---|---------------------------------------|
| All models: | |
| BV-V1123A410B | Lower Drum BLK X450DGN |
| BV-V1123A420B | Upper Drum BLK X450EGN |
| BM-401296J1 | Motor E20EL89 (Drum Motor) |
| For Models: VS-F440EA/EDG/ED1/EK/EM/EO/ EOG-V/EOH VS-F441EA/F450-EOH VS-F455EOH | |
| HR-405340J | Head Combo HVMZA1121A |
| HE-390013J | Head E HVFME0020A |
| For Models: VS-F480EK-V/EOG-V VS-F490EM/EO/EOH/ES VS-F497EOH | |
| HR-405340J | Head Combo HVMZA1121A |
| HE-390013J | Head HVFME0020A |
| For Models: VS-F480EK-V/EOG-V VS-F490EM/EO/EOH/ES VS-F497EOH | |
| BM-400682J1 | Motor DFX-67B3VWB1 (Capstan Motor) |
| BM-387503J | Motor Part (Loading Motor) |

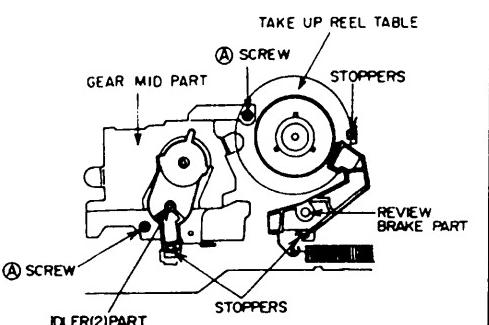
Recommended Safety Parts

| Item | Part No. | Description |
|------------------------------|----------------------------|--------------------------------|
| Models: EA/EDI | | |
| D1 - D12 | ED-511907 | D Silicon 1N4002 100/1.0A |
| D16 | ED-404029J | D Zener H UTZJ10B T26 |
| D18 | ED-511907 | D Silicon 1N4002 100/1.0A |
| FR1 , FR3 | ER-408375J | R Fuse V TO5RF25SCPVT1/4WR12K |
| FR2, FR4 | ER-400728J | R Fuse V TO5 RF25SCVTP1/4WR12K |
| FR5 | ER-400605J | R Fuse V TO5 ERD2FCV1/4W15ROG |
| TR1 | ET-381175J | TR 2SD1856 |
| TR2, TR7 | ET-366365 | TR 2SB1185 E,F |
| TR3, TR4, TR5 | ET-405622J | TR 2SD2061 E,F |
| TR6 | ET-391025J | TR 2SD2012 |
| Model: EM | | |
| C101 | EC-389414J | C CE V DE7 B102K 400AC |
| D3, D4 | ED-511907 | D Silicon 1N4002 100/1.0A |
| D6, D11 | ED-386226J | D Schottky RB100AT-32T26 40/1 |
| D8 | ED-386226J | D Schottky RB100AT-32T26 30/1 |
| D16 | ED-307572 | D Silicon H 1SS131 |
| D17, D18, D71 | ED-511907 | D Silicon 1N4002 100/1.0A |
| D72, D73, D74 | ER-400728J | R Fuse V TO5 RF25SCVTP1/4WR12K |
| D101 | ER-408375J | R Fuse V TO5RF25SCPVT1/4WR12K |
| FR1 | ER-400605J | R Fuse V TO5ERD2FCV 1/4W15ROG |
| FR2 | ER-400689J | R Fuse V TO5RF25SCVTP1/4WR68K |
| FR3 | ER-405441J | R Fuse V TO5RF25SCVTP1/4WR68K |
| FR4 | ER-400689J | R Fuse V TO5RF25SCVTP1/4WR68K |
| FR5 | ER-401039J | R Fuse V TO5ERD2FCV 1/4W 4R7J |
| RL101 | EQ-400153J | Relay POW AG2013 1TR 12V |
| TR1, TR5 | ET-366365 | TR 2SB1185 E,F |
| TR9, TR13 | ET-405622J | TR 2SD2061 E,F |
| TR2, TR7 | ET-366168 | TR 2SD1292 Q,R |
| TR4 | ET-405622J | TR 2SD2061 E,F |
| TR12 | ET-404195J | TR 2SC4486 S,T T05 |
| TR107 | ET-404195J | TR 2SC4486 S,T T05 |
| IC1 | EI-381575J | IC BA6121 |
| 19A | BT-410487J | Trans POW V1130 EA (EM) |
| 19B | BT-410489J | Trans POW V1130 ES (ED1) |
| 19C | BT-410488J | Trans POW V1130 EM (EM) |
| Models: F440EK/F490ES | | |
| D1 - D12 | ED-511907 | D Silicon 1N4002 100/1.0A |
| D16 | ED-404029J | D Zener H UTZJ10B T26 |
| FR1 , FR3 | ER-408375J | R Fuse V TO5RF25SCP1/4WR12K |
| FR2, FR4 | ER-400728J | R Fuse V TO5RF25SCVTP1/4WR12K |
| FR5 | ER-400605J | R Fuse V TO5ERD2FCV 1/4W15ROG |
| TR1 | ET-381175J | TR 2SD1856 |
| TR2, TR7 | ET-366365 | TR2SB1185 E,F |
| TR3 - TR6 | ET-405622J | TR2SD2061 E,F |
| Model: F480EK | | |
| D3, D4 | ED-511907 | D Silicon 1N4002 100/1.0A |
| D6, D8, D11 | ED-386226J | D Schottky RB100AT-32T26 40/1 |
| D17, D18, D71 | ED-511907 | D Silicon 1N4002 100/1.0A |
| D72, D73, D74 | ER-400728J | R Fuse V TO5 RF25SCVTP1/4WR12K |
| FR1 | ER-408375J | R Fuse V TO5 RF25SCPVT1/4WR12K |
| FR2 | ER-400605J | R Fuse V TO5 ERD2FCV 1/4W15ROG |
| FR3 | ER-400689J | R Fuse V TO5 RF25SCVTP1/4WR68K |
| FR4 | ER-405441J | R Fuse V TO5 RF25SCVTP1/4WR27K |
| FR5 | ER-401039J | R Fuse V TO5 RF25SCVTP1/4WR27K |
| TR1, TR5 | ET-366365 | TR 2SB1185 E,F |
| TR9, TR13 | ET-405622J | TR 2SD2061 E,F |
| TR12 | ET-404195J | TR 2SC4486 S,T T05 |
| BT-403872J | BT-403883J | Trans Pow V1130 EK (440EK) |
| BT-403883J | BT-410489J | Trans Pow V1130 EOG-V (480EK) |
| BT-410489J | Trans Pow V1130 ES (490ES) | |
| Model: F480EK | | |
| IC1 | EI-381575J | IC BA6121 |
| TR2, TR7 | ET-405622J | TR 2SD2061 E,F |
| TR4 | ET-404195J | TR 2SC4486 S,T T05 |
| BT-403872J | BT-403883J | Trans Pow V1130 EK (440EK) |
| BT-403883J | BT-410489J | Trans Pow V1130 EOG-V (480EK) |
| BT-410489J | Trans Pow V1130 ES (490ES) | |

Mechanical Parts List

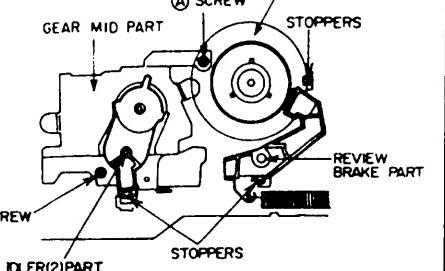
| Description | Part No. | Description | Part No. | Description | Part No. |
|---|---------------|-----------------------|---|------------------------|---------------|
| All Models: | | | | | |
| Head Drum Block | MA-38747J3 | Slider Front Loading | ML-387428J | SP Pull Main Brake | ZG-387320J |
| Base Drum | ZS-563444 | Slider Pinch Part | ML-387431J1 | SP Pull Review Brake | ZG-387323J |
| BID2X08STL CMT | ZS-379405 | SLIT W17X032X025PSL | ZW-374445 | SP Pull Tension (2) | ZG-395470J |
| BID3X06STL CMT | ZS-321298 | SP Loading Brake | ZG-387467J | SP Push A/C | ZG-387438J1 |
| BID3X08STL CMT | | SP Plate Earth | ZG-392294J | SP Torsion Arm Damper | ZG-395567J |
| DT BID30X06STL CMT | | SP Plate Holder | ZG-387348J1 | SP Torsion Damper (S) | ZG-387421J |
| C080 | ZS-389853J | SP Pull Main Brake | ZG-387320J | SP Torsion Damper (T) | ZG-388290J1 |
| Earth Brush Part AG | VT-401282J | SP Pull Review Brake | ZG-387323J | SP Torsion Joint (2) | ZG-392831J |
| Holder FPC | SZ-387388J | SP Push Tension | ZG-387272J | SP Torsion Load (S) | ZG-387417J |
| Lower Drum BLK X450EGN | BV-V1123A410B | SP Push A/C | ZG-387438J1 | SP Torsion Load (T) | ZG-387418J |
| MOTOR E20EL89 (Drum Motor) | BM-401296J1 | SP Torsion Arm Damper | ZG-395567J | SP Torsion Release | ZG-387420J1 |
| | | SP Torsion Damper (S) | ZG-387421J | SP Torsion Review | ZG-387428J |
| | | SP Torsion Damper (T) | ZG-387420J1 | ST BID30X06STL CMT | ZS-358936 |
| | | SP Torsion Joint (2) | ZG-392831J | ST BID30X12STL CMT | ZS-336714 |
| | | SP Torsion Load (S) | ZG-387417J | Tension Arm Blk F600EA | BL-V1123A050A |
| | | SP Torsion Load (T) | ZG-387418J | Holder Lever Tension | SZ-3872631J4 |
| | | SP Torsion Release | ZG-387420J1 | Tension Band Part | ML-390768J4 |
| | | SP Torsion Review | ZG-387282J | Tension Brake Part | MZ-395471J3 |
| For Models: | | | For Models: | | |
| VS-F490EM/EO/EOH/ES | | | VS-F490EM/EO/EOH/ES | | |
| VS-F497EOH | | | VS-F497EOH | | |
| VS-F480EK-V/EOG-V | | | VS-F480EK-V/EOG-V | | |
| VS-F490EM/EO/EOH/ES | | | VS-F490EM/EO/EOH/ES | | |
| VS-F497EOH | | | VS-F497EOH | | |
| For Models: | | | For Models: | | |
| VS-F440EA/EDE/ED1/EK/EM/EO/EOG-V/EOH | | | VS-F440EA/EDE/ED1/EK/EM/EO/EOG-V/EOH | | |
| VS-F441EA | | | VS-F441EA | | |
| VS-F450EOH | | | VS-F450EOH | | |
| VS-F455EOH | | | VS-F455EOH | | |

Replacement of the Gear Mid Part (JFX Only)



- 1) Remove the REVIEW BRAKE PART and IDLER (2) PART.
- 2) Release the stopper of the TAKE UP REEL TABLE, then remove it.
- 3) Remove the two "A" screws then replace the GEAR MID PART as shown above.
- 4) Reassemble in reverse order.

Electrical Adjustments



Precautionary items prior to adjustments

1. The colour bar generator output should be 1.0 Vp-p.
2. The video output terminal should be terminated with 75 ohms (connect dummy load or 75 ohms input TV).

The following test tapes are required:

| Test tape | Parts No. |
|-----------|-----------|
| TF-527BL | AT-711880 |
| TF-530RFS | AT-751775 |
| TF-532CBS | AT-751360 |
| TF-553AT | AT-751785 |

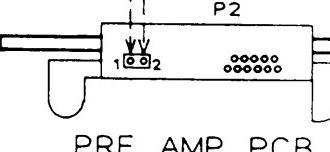
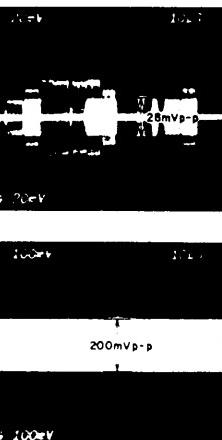
STEP ADJUSTMENT ITEM

1. MODE and INPUT SIGNAL/TEST TAPE
2. TEST POINT and ADJ part
3. REMARKS (*) & RESULT (*)

ADJ part
Test point

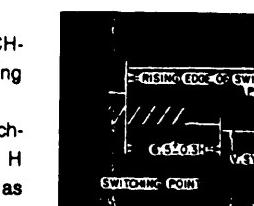
6 VIDEO REC CURRENT (LP MODE)

1. "REC" (LP MODE), PAL colour bar signal
2. P2 (REC.CURR) ① pin, ② pin & VR1 (REC-CHROMA), VR2 (REC-Y)
3. • Connect an oscilloscope's CH-1 to P2 (REC.CURR) ① pin and CH-2 to ② pin.
- Set the oscilloscope's display mode to "ADD" mode and CH-2 polarity to "INVERTED". (Make sure to set the oscilloscope's "volt / div" SW position where the waveform is not distorted and CH-2 position should be the same as CH-1.)
- Turn the VR2 (REC-Y) fully, counterclockwise.
- * Adjust VR1 (REC-CHROMA) so that the chroma REC current becomes 28 mVp-p at the burst signal area.
- * Disconnect the input signal, then adjust VR2 (REC-Y) so that the Y REC current becomes 200 mVp-p.



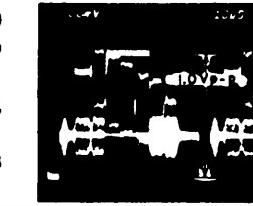
1 PB SWITCHING POINT

1. "PB", test tape TF-530RFS
 2. TP2 (SWP), VIDEO OUT & VR301 (SW.POINT)
 3. • Connect an oscilloscope's CH-1 to TP2 (SWP) for triggering and CH-2 to VIDEO OUT.
- * Adjust VR301 so that the switching point is positioned 6.5 H from the V-SYNC left edge as shown.



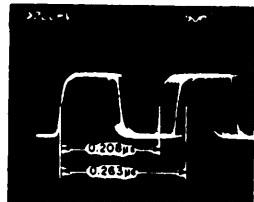
7 VIDEO PB LEVEL

1. "REC" → "PB", PAL colour bar signal
 2. VIDEO OUT & VR404 (PB LEVEL)
 3. • Connect an oscilloscope to VIDEO OUT
 - Make a recording on the tape, then play it back
- * Adjust VR404 so that the PB level becomes 1.0 Vp-p



5 CARRIER SET & DEVIATION

1. "REC", PAL colour bar signal
 2. TP401 (REC.Y) & VR402 (CARRIER), VR403 (DEVIATION)
 3. • Connect an oscilloscope to TP401 (REC.Y)
- * VR402 (CARRIER) : 0.263 μs (3.8 MHz)
- * VR403 (DEVIATION): 0.208 μs (4.8 MHz)

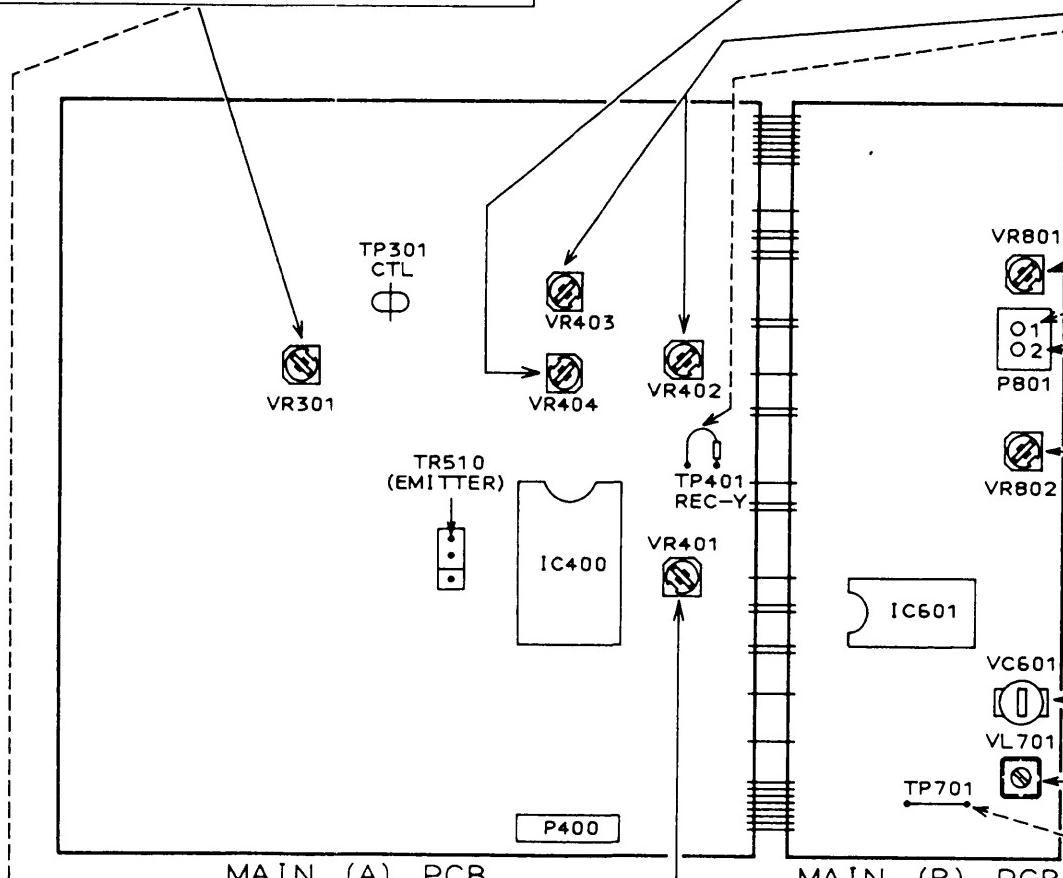


3 AUDIO REC BIAS

1. "REC", No signal input
 2. P801 ① pin, ② pin & VR801
 3. • Connect an AC voltmeter to P806 ① pin (GND side) and ② pin.
- (Never connect the AC voltmeter's GND to the VCR's ground.)
- * Adjust VR801 so that the reading on the AC voltmeter becomes 2.4 mV

2 AUDIO PB LEVEL

1. "PB", test tape TF-527BL
 2. AUDIO OUT & VR802
 3. • Connect AC voltmeter to AUDIO OUT
- * -5 dBs



10 ENVELOPE DETECT (I-HQ)

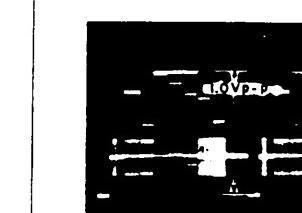
(This adjustment should be performed in the "TEST" mode.) To set the VCR to the "TEST MODE", press and hold both the "POWER" and "EJECT" buttons on the front panel, then plug in the AC power cord.

The TEST MODE can be cancelled by disconnecting the AC power cord or simply by pressing the RESET button on the front panel.

1. "REC" → "PB", PAL colour bar signal
 2. FL display & VR3, VR4
 3. • Record the PAL colour bar signal on the test tape TF-553AT and then play it back.
 - Observe the number which is displayed on the minute part of the FL display.
- * Adjust the VR3 so that the number displayed on the FL display becomes "8D". (SP MODE)
- * Adjust the VR4 so that the number displayed on the FL display becomes "8D". (LP MODE)

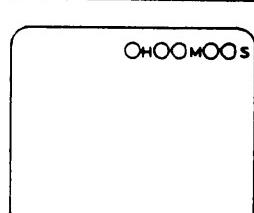
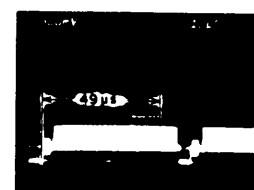
4 VIDEO E-E LEVEL

1. "E-E" (STOP mode), PAL colour bar signal
 2. VIDEO OUT & VR401 (E-E LEVEL)
 3. • Connect an oscilloscope to VIDEO OUT.
- * 1.0 Vp-p



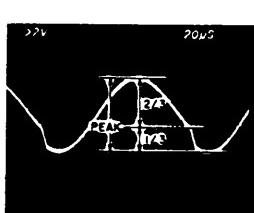
8 CHARACTER POSITION

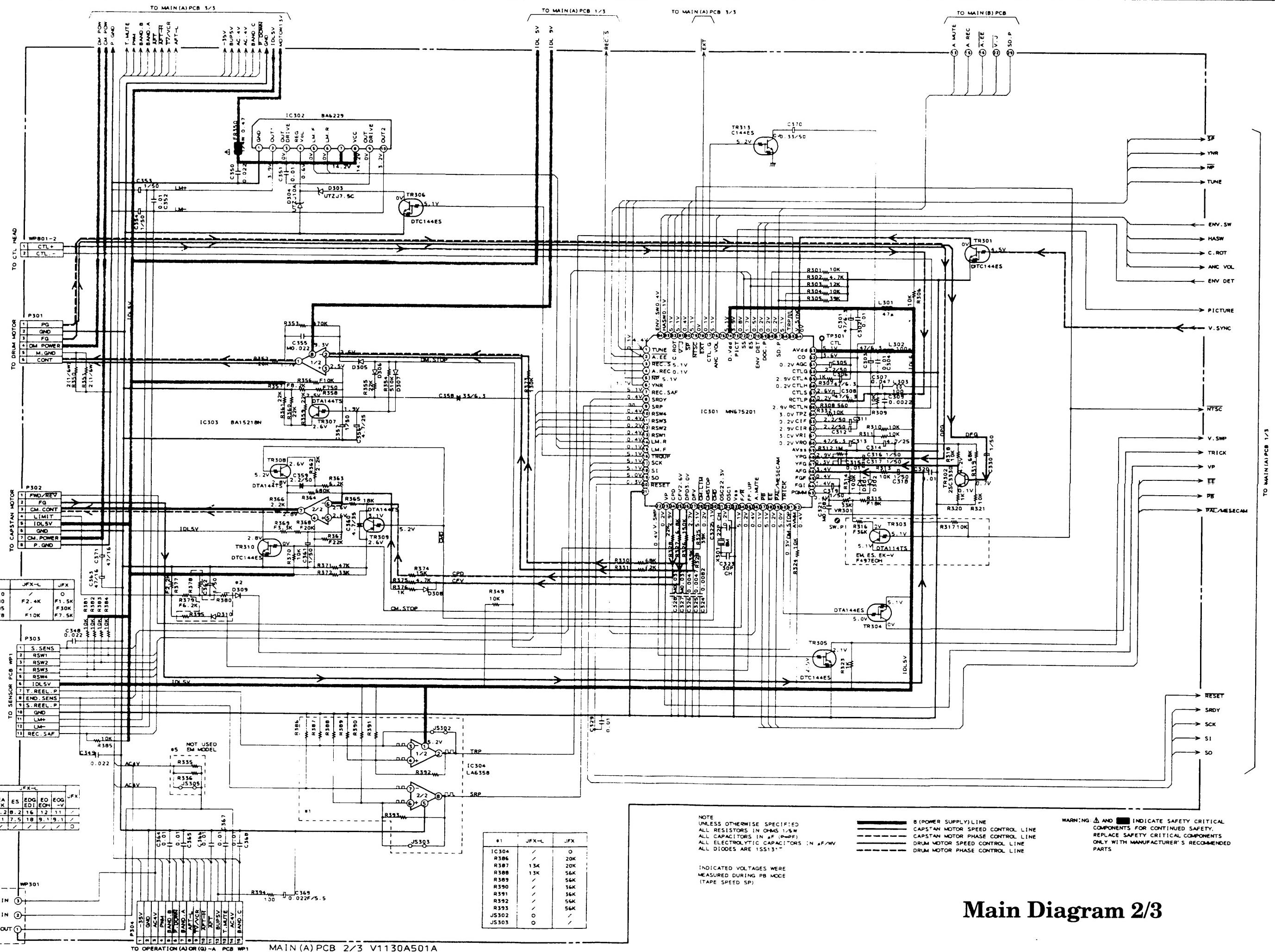
1. "E-E" (STOP mode), No signal input
 2. VIDEO OUT, TV screen & VC601 (IMS)
 3. • Press the "DISPLAY" button once on the remote control to display the elapsed tape counter.
 - Connect an oscilloscope to VIDEO OUT
- * Adjust VC601 (IMS) so that the right end of the IMS signal becomes 49 us from the H-SYNC as shown.



9 P/S AUTO SENSITIVITY (EM/EDG/EOG-V ONLY)

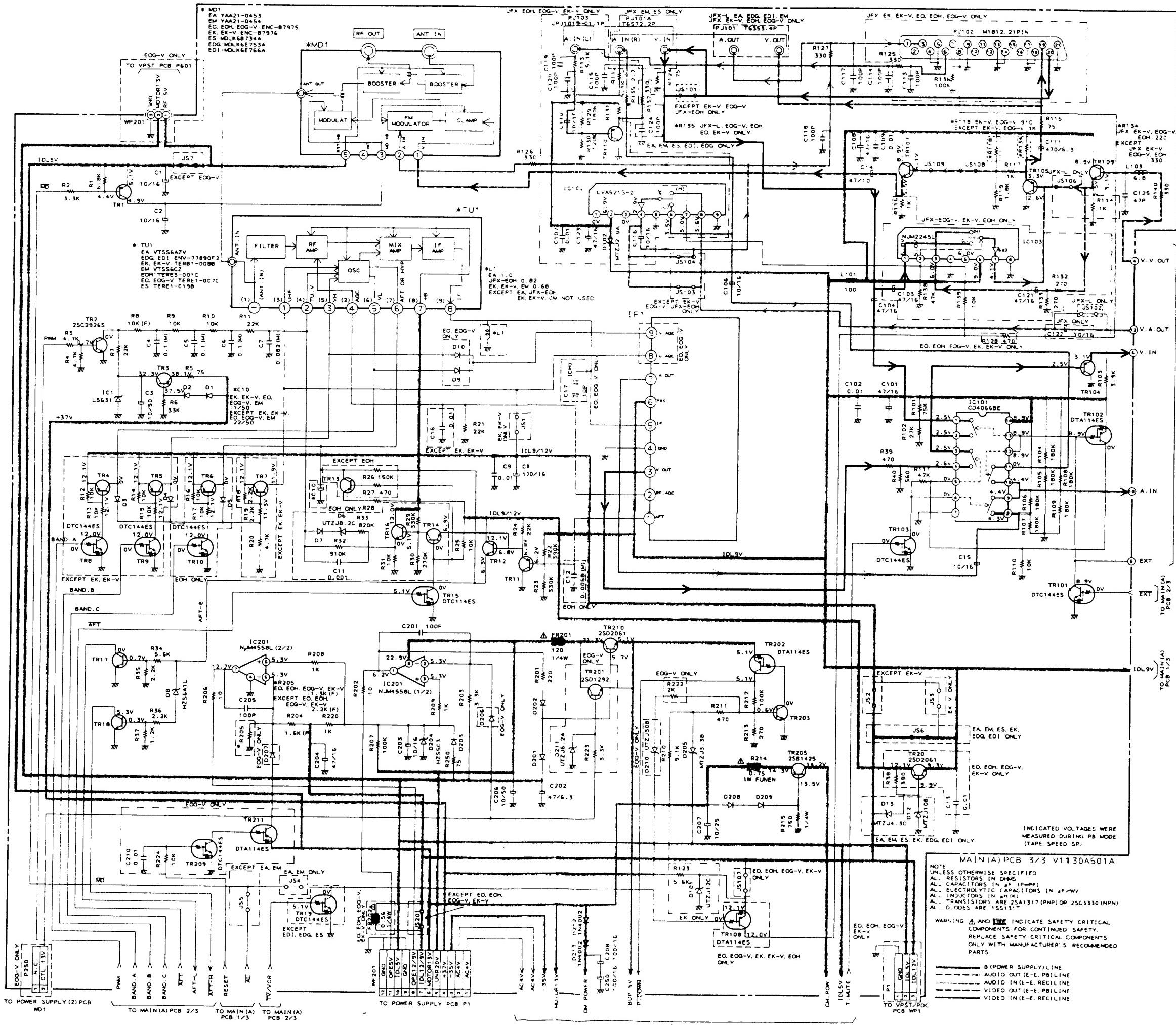
1. "E-E" (STOP mode), SECAM colour bar signal
 2. TP701 (P/S SENS), VL701 (P/S SENS)
 3. • Connect an oscilloscope to TP701 (P/S SENS)
- * Adjust the VL701 so that the distorted point of the waveform becomes 1/3 from the bottom, as shown.



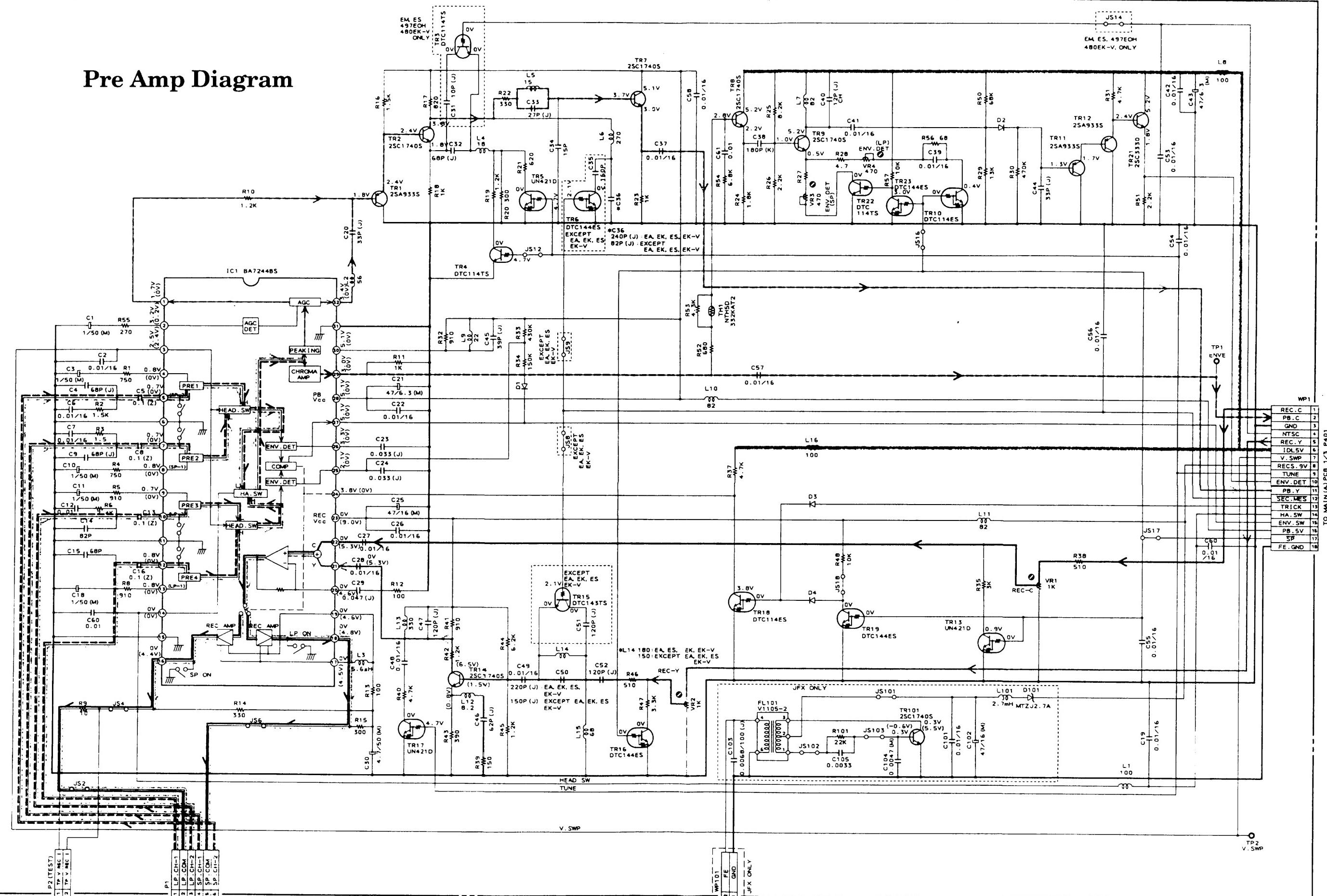


Main Diagram 2/3

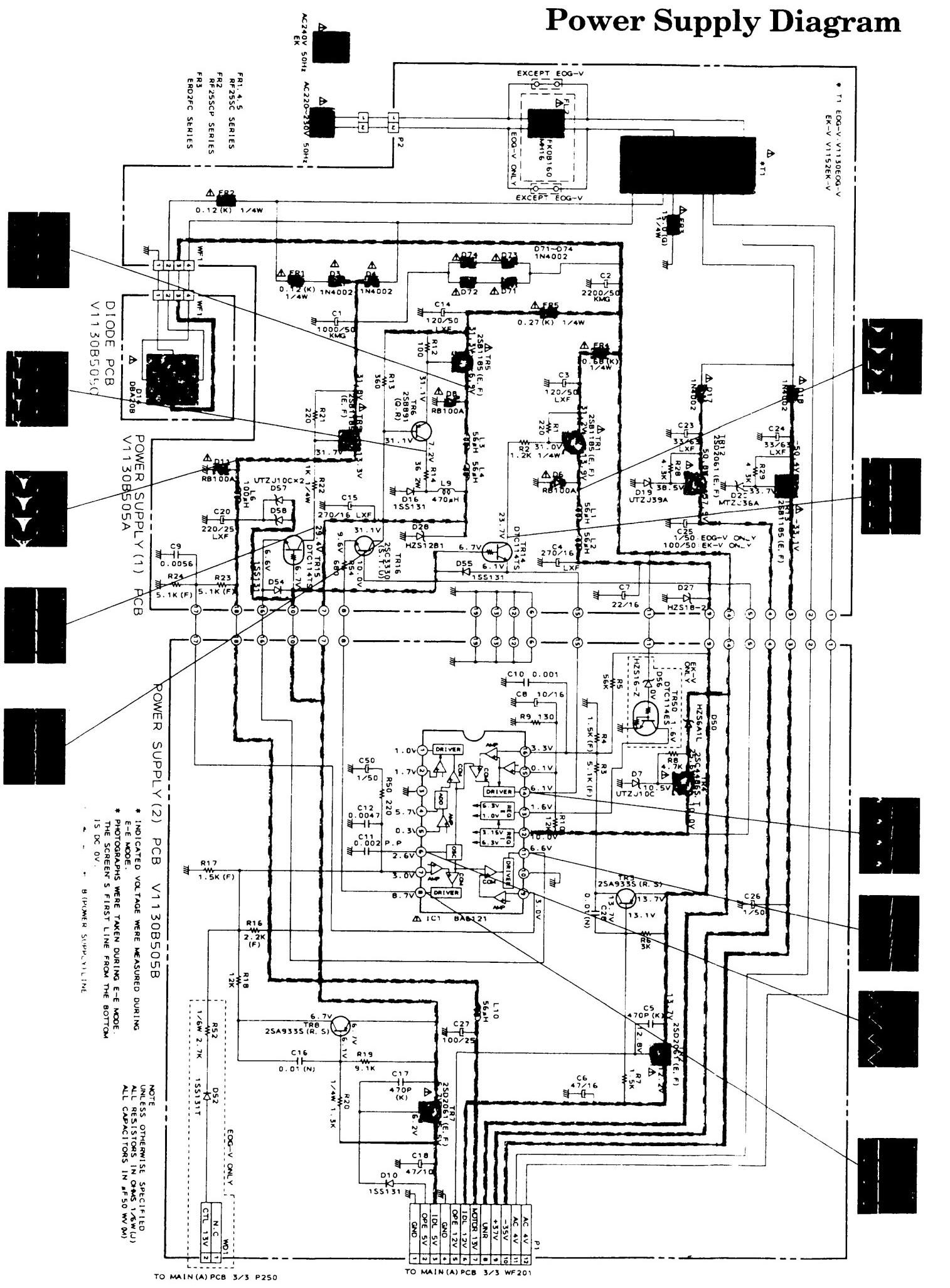
Main Diagram



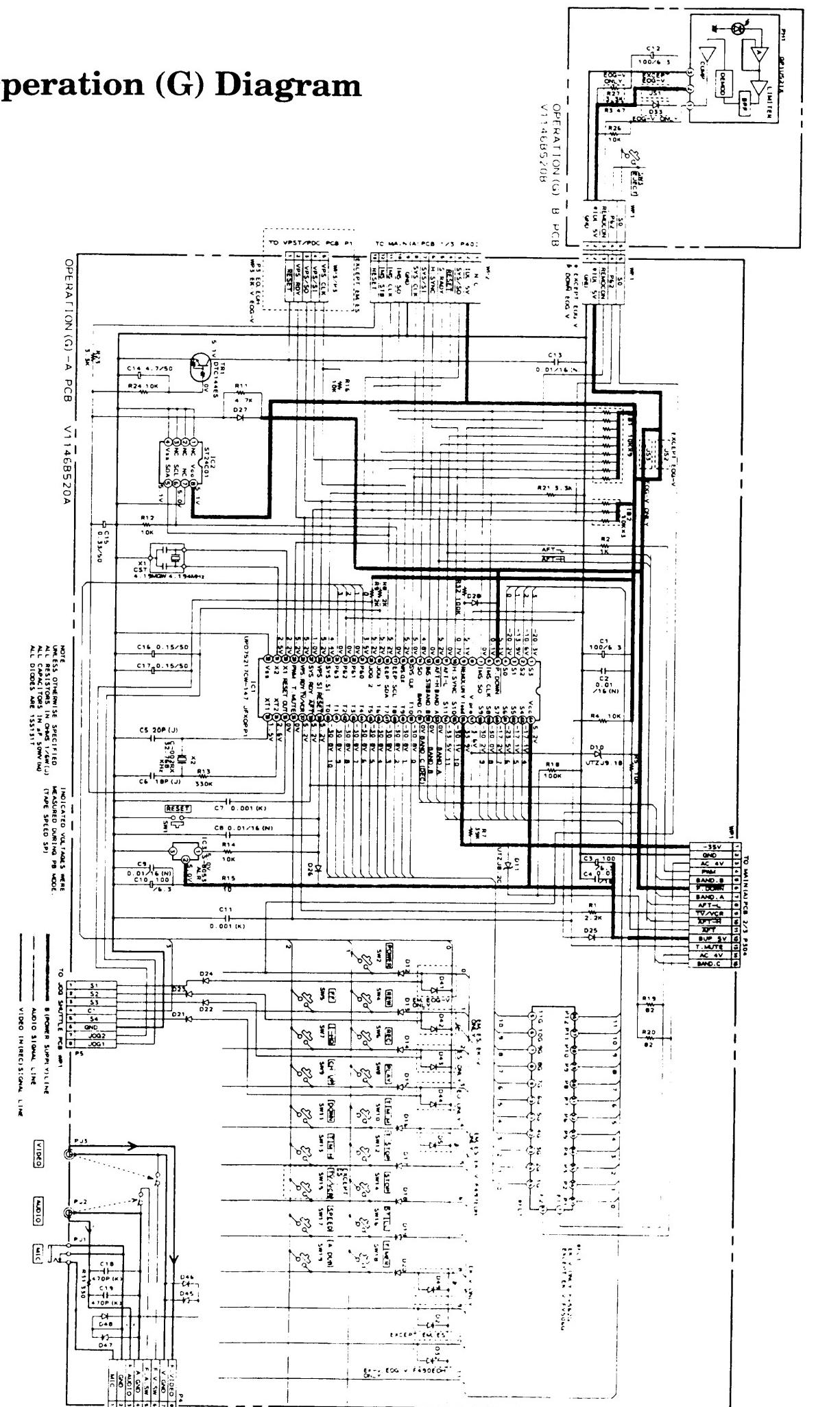
Pre Amp Diagram

JFX/JFX-L
PRE AMP

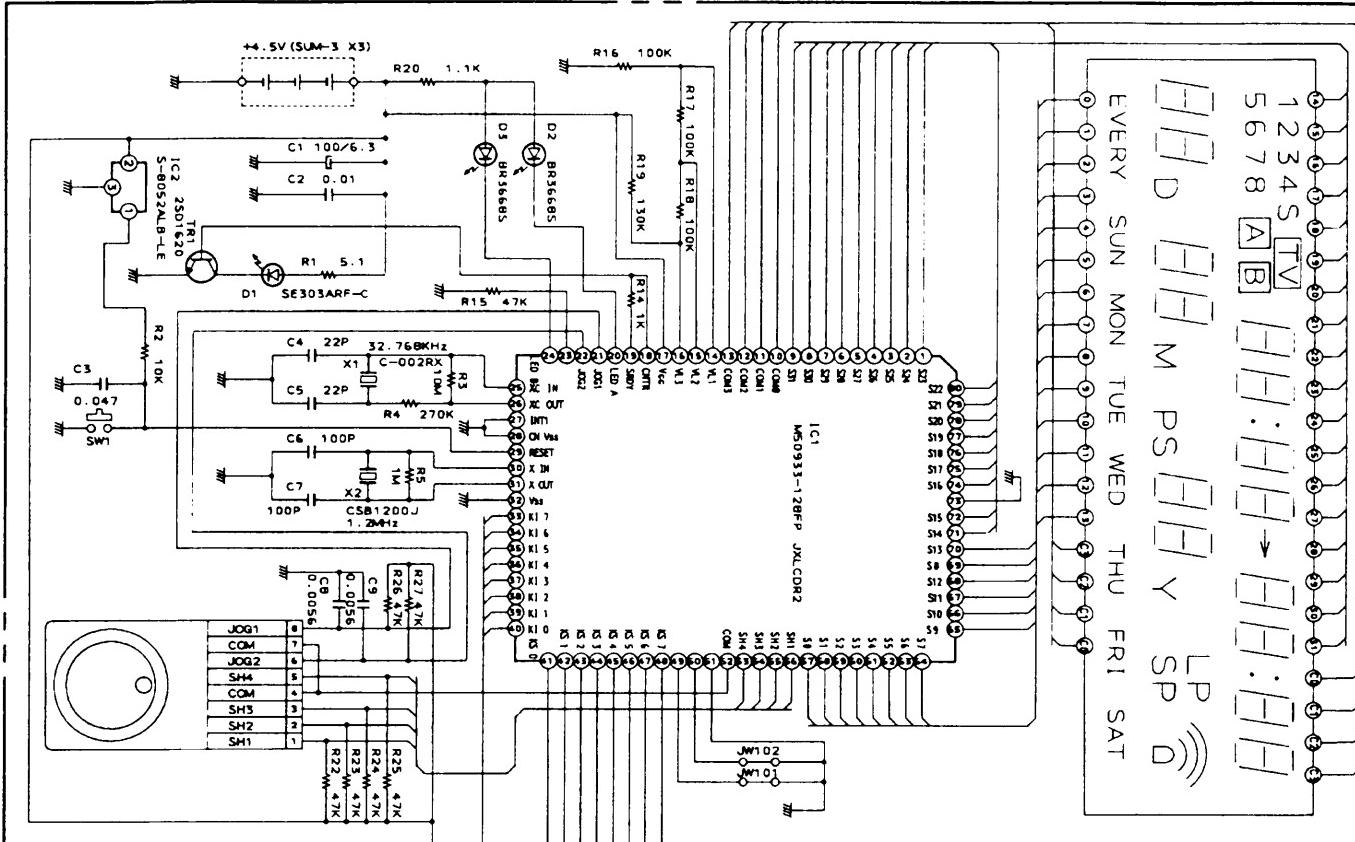
Power Supply Diagram



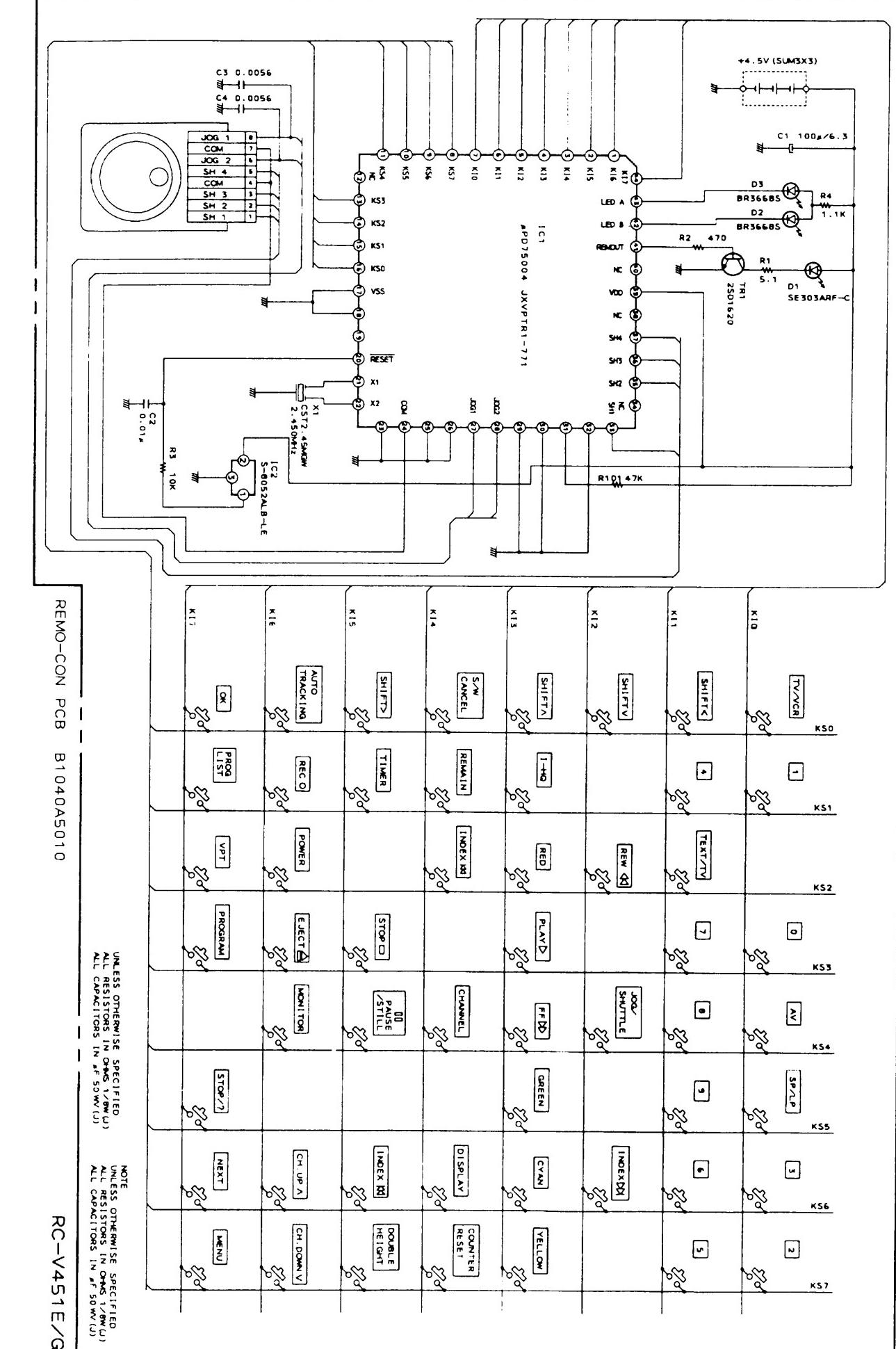
Operation (G) Diagram



Remote Control Diagram RC-V452E



Remote Control Diagram RC-V451E



NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/2W (1/2W)
ALL CAPACITORS IN MF 50VW (1/2W)

REM-CON PCB B1043A5010

RC-V452E